

## HANDHELD DEVICE LOUDSPEAKER SYSTEM

## ABSTRACT OF DISCLOSURE

Loudspeaker systems for handheld devices (2400, 2500) such as cellular telephones (100, 1400, 1600, 1900) are provided. The loudspeaker systems include at least one omnidirectional monopole loudspeaker (404, 1504, 1802, 1918, 1920) and at least one dipole loudspeaker (402, 1502, 1804, 1914, 1916). Filtering is used to compensate for differences between electric-to-acoustic signal transfer functions of the loudspeakers in order to achieve destructive interference of emitted audio in one direction and reinforcement in another direction. Various loudspeaker systems that are reconfigurable from directional mode, to omnidirectional mode are provided. Filtering is also used to add a frequency dependent phase to one signal in order to alter a direction of maximum sound pressure level. Two monopole-dipole pairs can be used to produce a stereo effect. The monopole and dipole loudspeakers can be housed in a detachable loudspeaker accessory (200).